FIG. 1

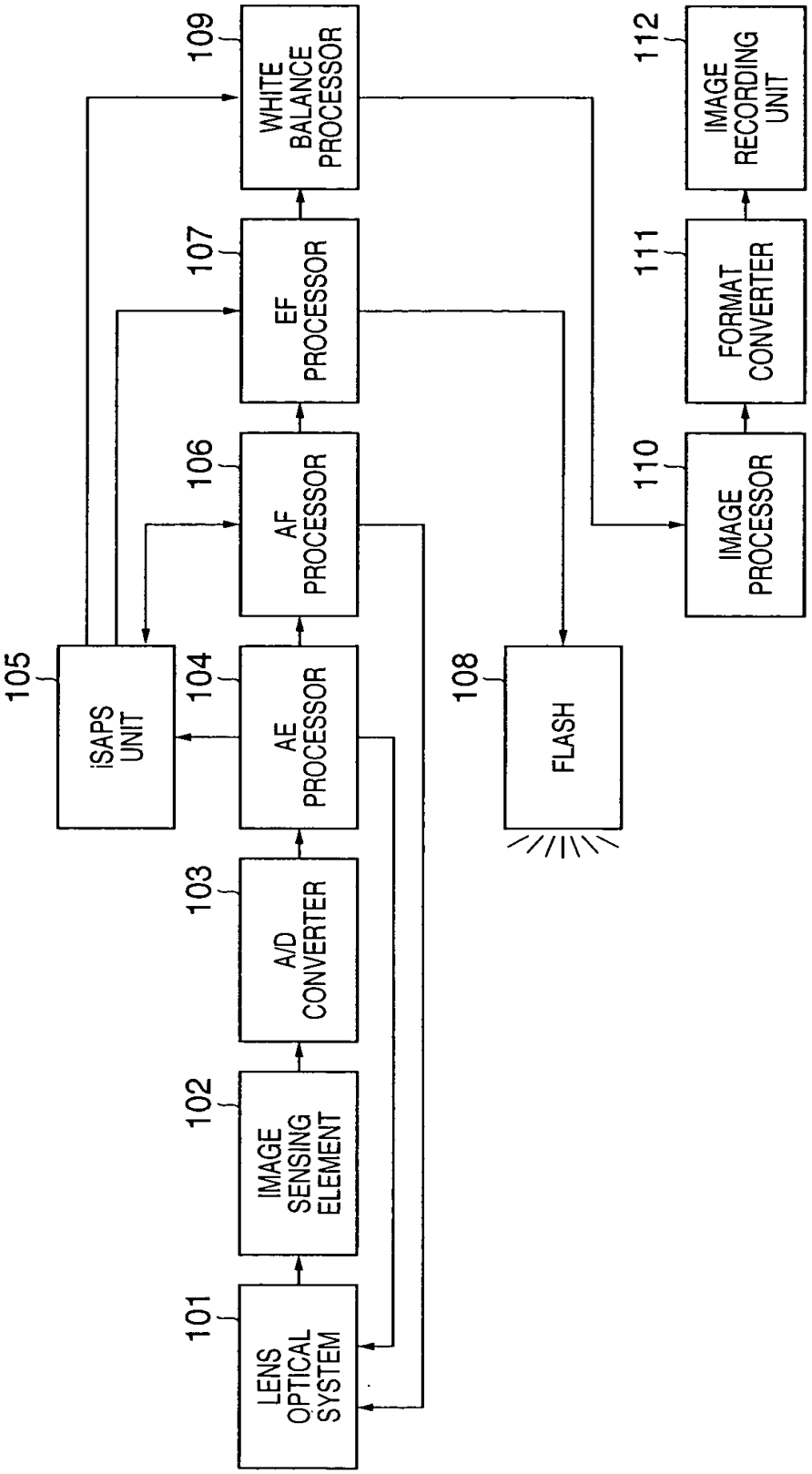

101
LENS OPTICAL SYSTEM
102
IMAGE SENSING ELEMENT
103
A/D CONVERTER
104
AE PROCESSOR
105
iSAPS UNIT
106
AF PROCESSOR
107
EF PROCESSOR
108
FLASH
109
WHITE BALANCE PROCESSOR
110
IMAGE PROCESSOR
111
FORMAT CONVERTER
112
IMAGE RECORDING UNIT

FIG. 2

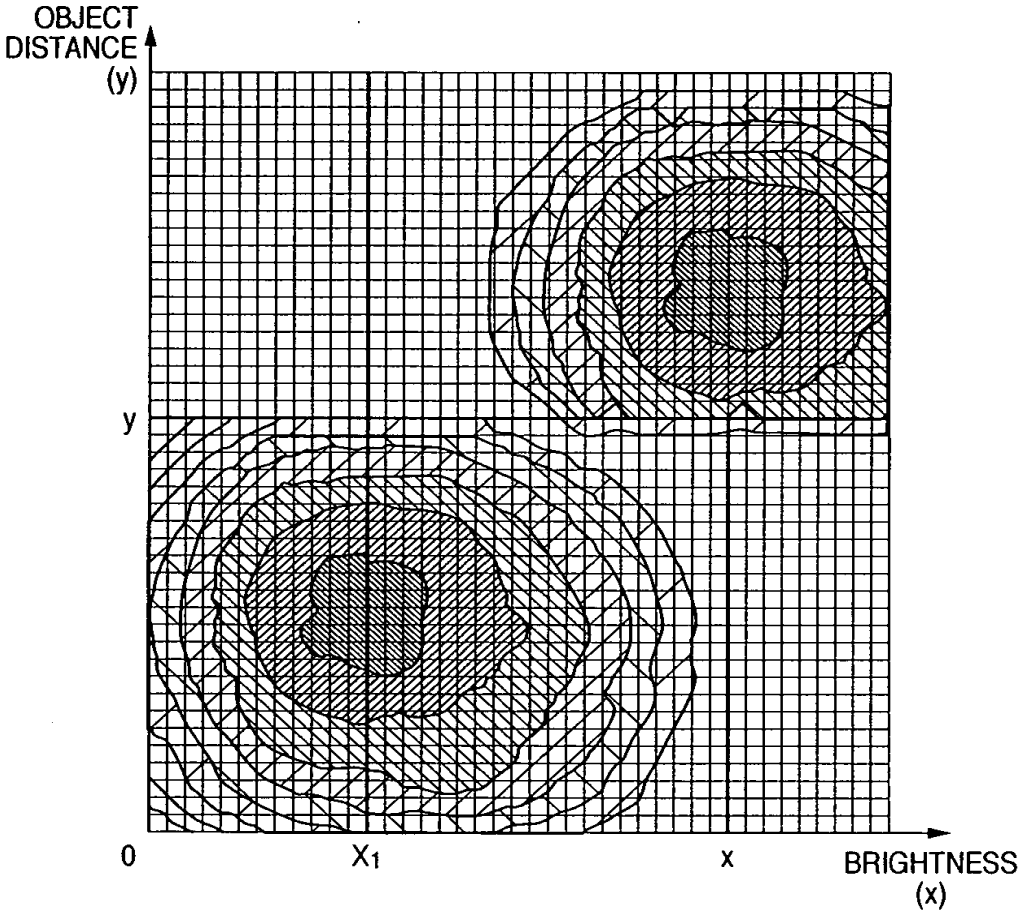


FIG. 3

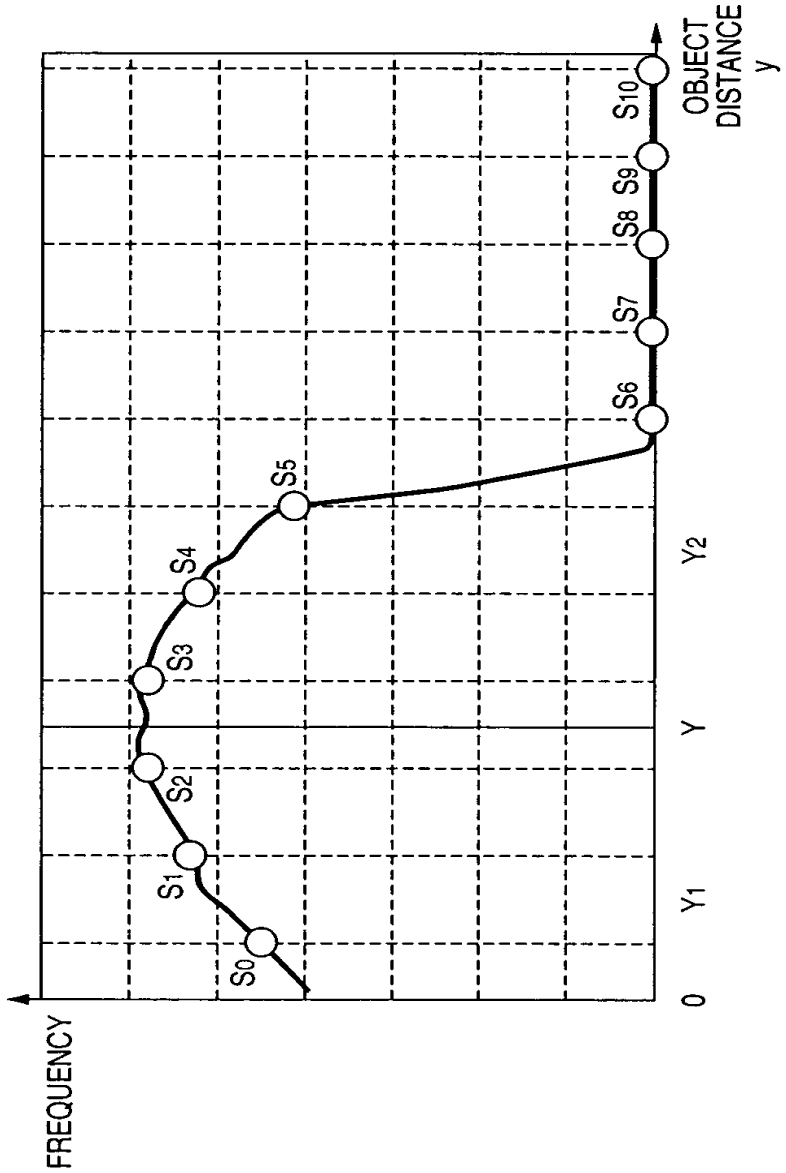

FREQUENCY
OBJECT DISTANCE y
0
Y1
Y
Y2
S0
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10

FIG. 4

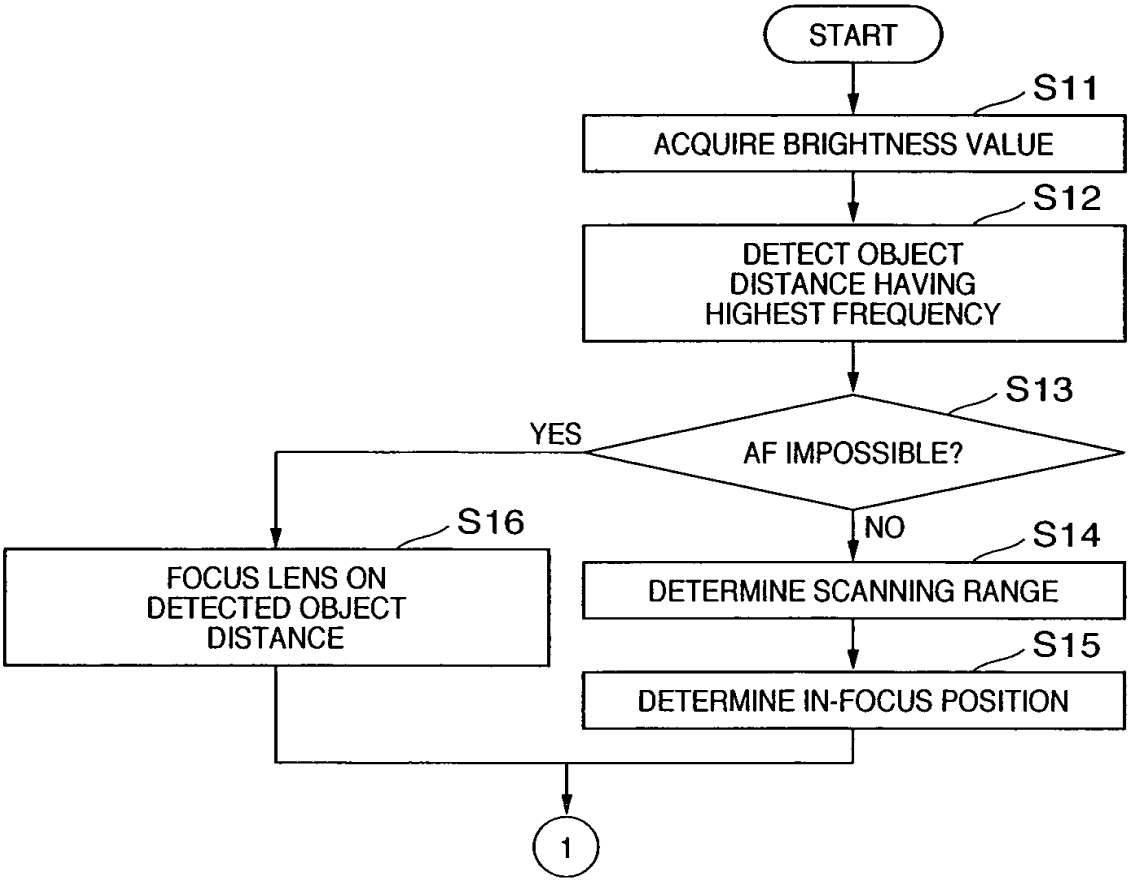

START
S11
ACQUIRE BRIGHTNESS VALUE
S12
DETECT OBJECT DISTANCE HAVING HIGHEST FREQUENCY
S13
AF IMPOSSIBLE?
YES
NO
S16
FOCUS LENS ON DETECTED OBJECT DISTANCE
S14
DETERMINE SCANNING RANGE
S15
DETERMINE IN-FOCUS POSITION
1

FIG. 5

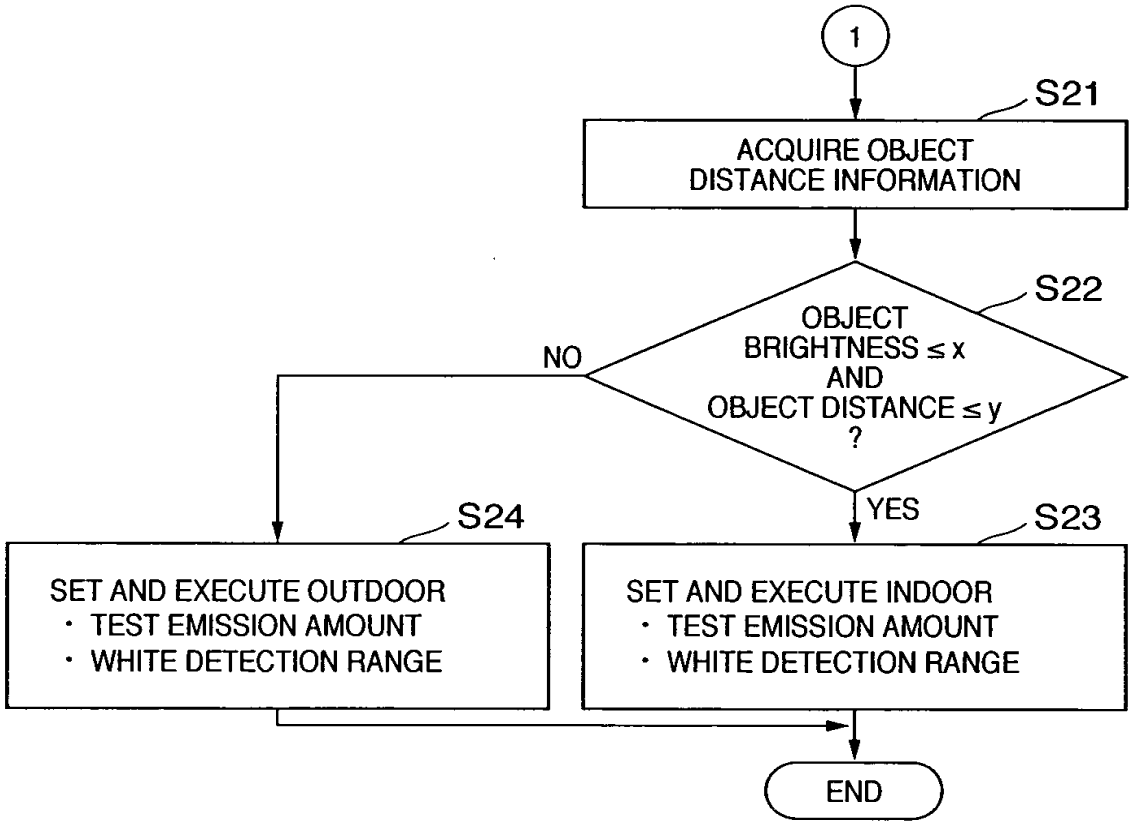

1
S21
ACQUIRE OBJECT DISTANCE INFORMATION
S22
OBJECT BRIGHTNESS ≤ x AND OBJECT DISTANCE ≤ y ?
NO
YES
S24
SET AND EXECUTE OUTDOOR
· TEST EMISSION AMOUNT
· WHITE DETECTION RANGE
S23
SET AND EXECUTE INDOOR
· TEST EMISSION AMOUNT
· WHITE DETECTION RANGE
END

FIG. 6

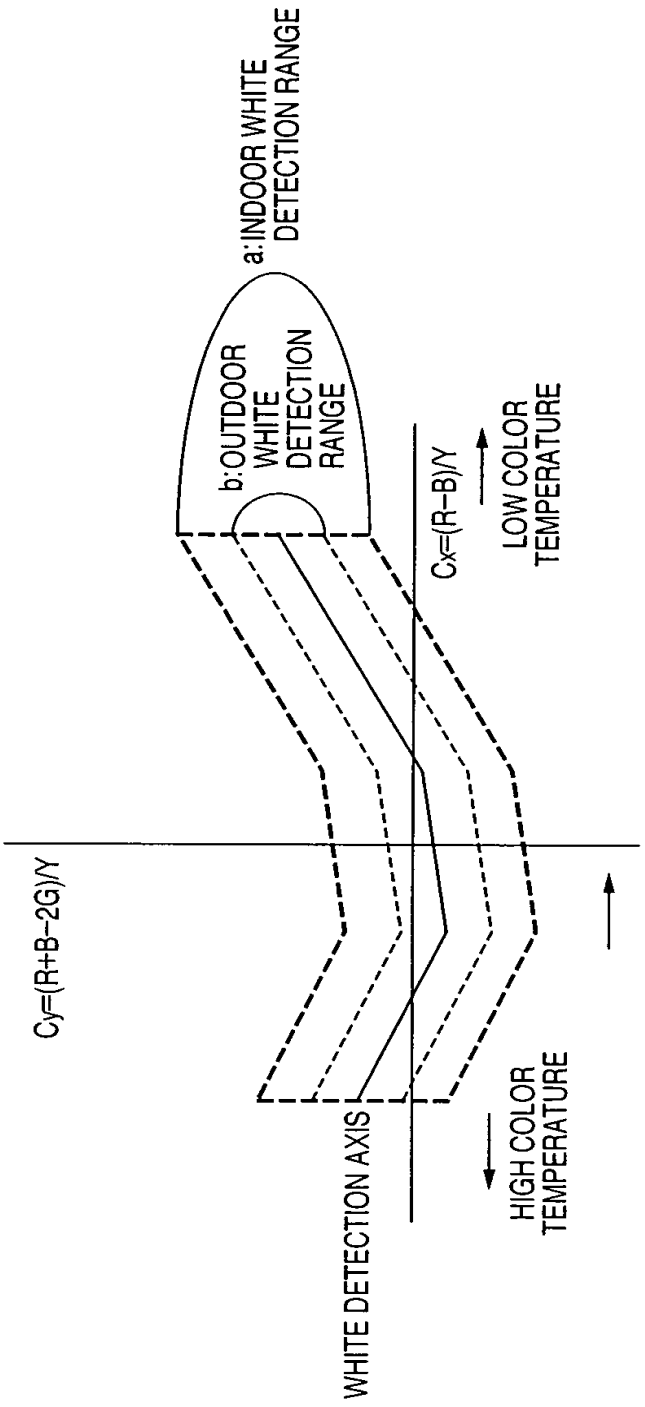

a:INDOOR WHITE DETECTION RANGE
b:OUTDOOR WHITE DETECTION RANGE
Cx=(R−B)/Y
LOW COLOR TEMPERATURE
Cy=(R+B−2G)/Y
WHITE DETECTION AXIS
HIGH COLOR TEMPERATURE

FIG. 7

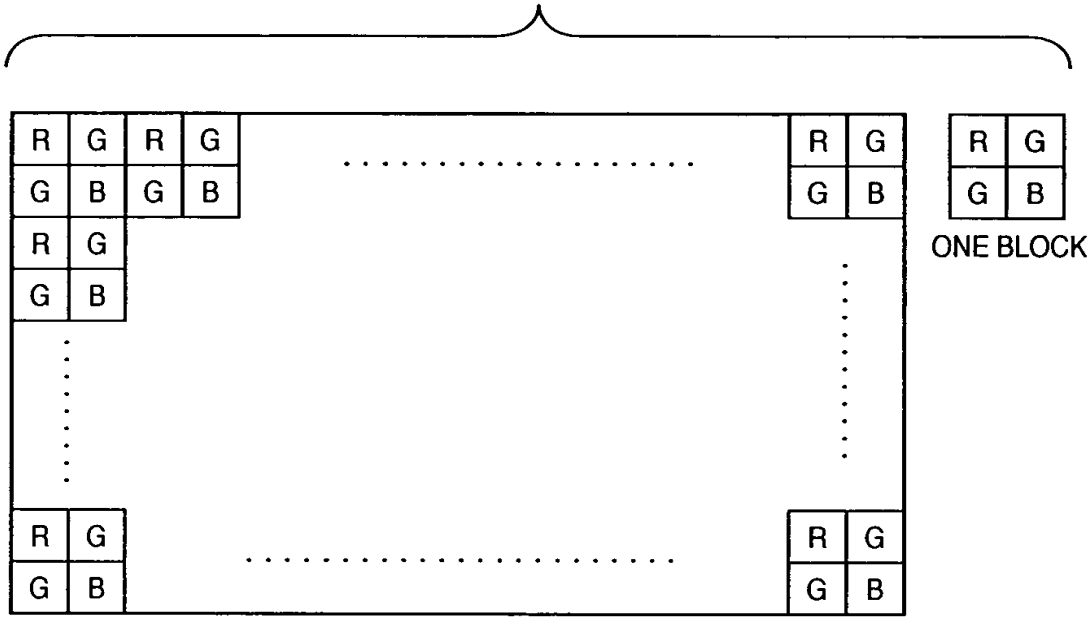


FIG. 8

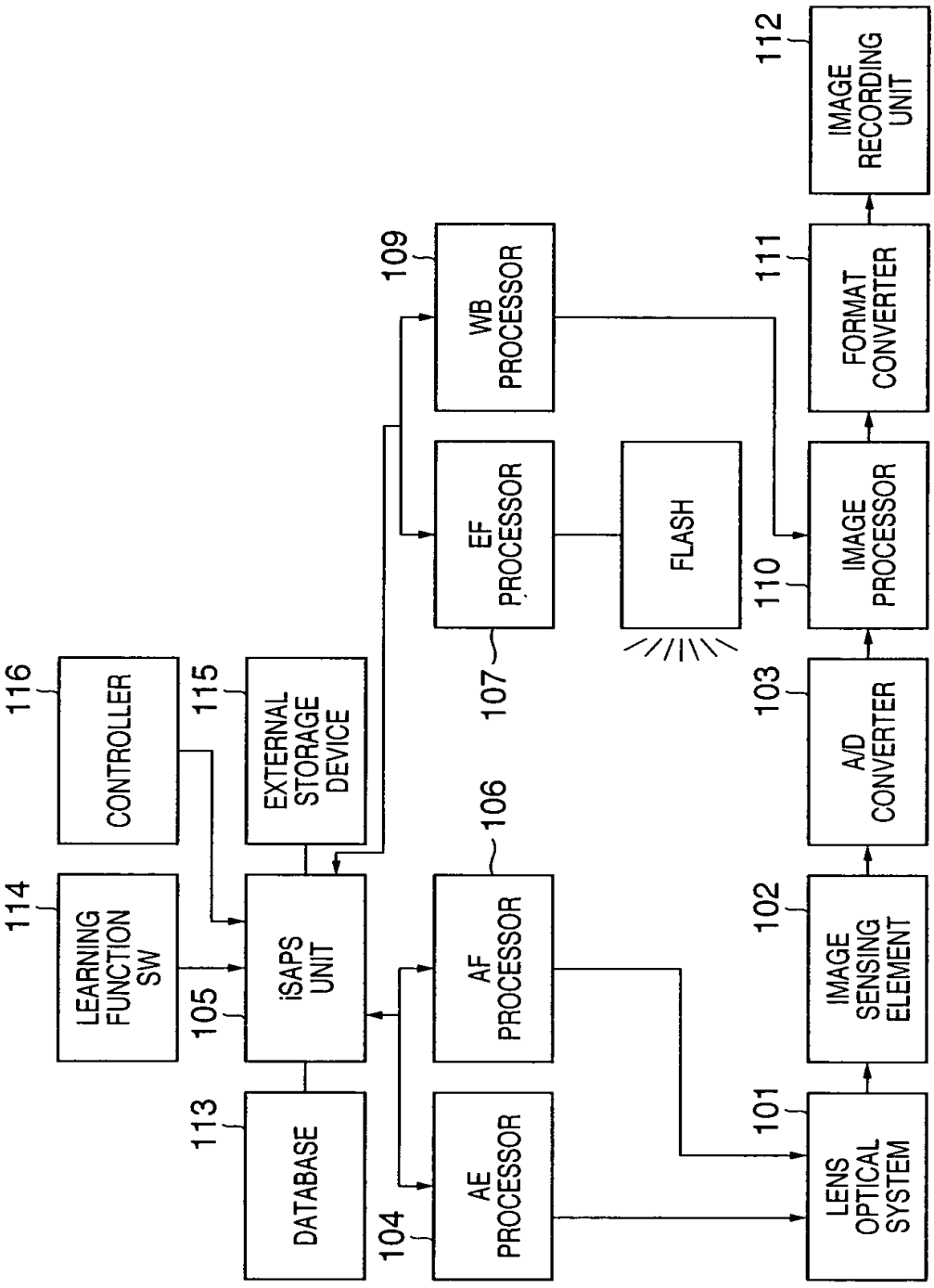

LENS OPTICAL SYSTEM
101
IMAGE SENSING ELEMENT
102
A/D CONVERTER
103
AE PROCESSOR
104
AF PROCESSOR
106
EF PROCESSOR
107
WB PROCESSOR
109
IMAGE PROCESSOR
110
FORMAT CONVERTER
111
IMAGE RECORDING UNIT
112
DATABASE
113
LEARNING FUNCTION SW
114
CONTROLLER
116
iSAPS UNIT
105
EXTERNAL STORAGE DEVICE
115
FLASH

FIG. 9A

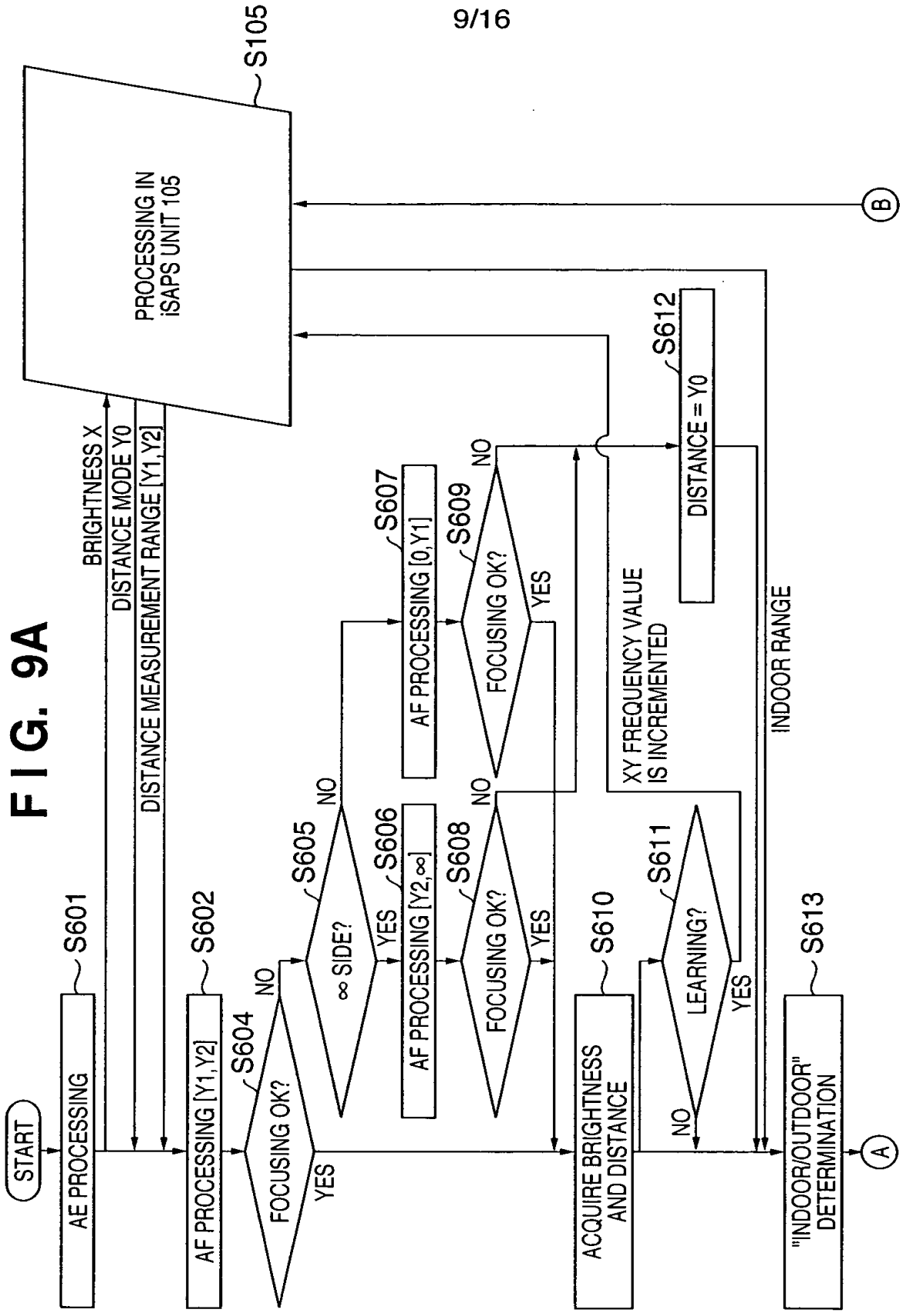

START
AE PROCESSING
S601
AF PROCESSING [Y1,Y2]
S602
FOCUSING OK?
S604
NO
YES
∞ SIDE?
S605
NO
YES
AF PROCESSING [Y2,∞]
S606
AF PROCESSING [0,Y1]
S607
FOCUSING OK?
S608
NO
YES
FOCUSING OK?
S609
NO
YES
ACQUIRE BRIGHTNESS AND DISTANCE
S610
LEARNING?
S611
NO
YES
DISTANCE = Y0
S612
"INDOOR/OUTDOOR" DETERMINATION
S613
A
B
PROCESSING IN iSAPS UNIT 105
S105
BRIGHTNESS X
DISTANCE MODE Y0
DISTANCE MEASUREMENT RANGE [Y1,Y2]
XY FREQUENCY VALUE IS INCREMENTED
INDOOR RANGE

FIG. 9B

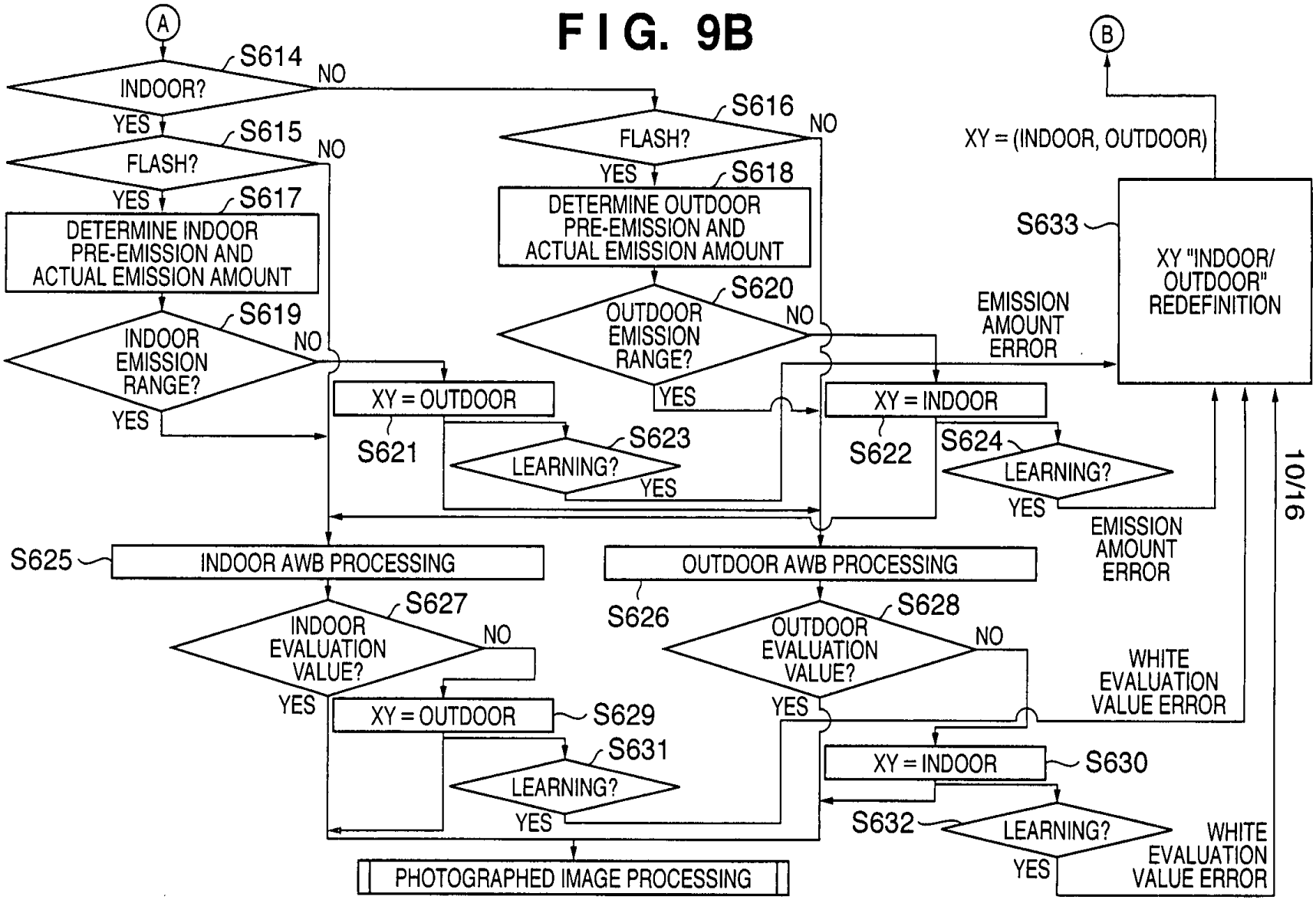

A
S614
INDOOR?
NO
YES
S615
FLASH?
NO
YES
S617
DETERMINE INDOOR PRE-EMISSION AND ACTUAL EMISSION AMOUNT
S619
INDOOR EMISSION RANGE?
NO
YES
S616
FLASH?
NO
YES
S618
DETERMINE OUTDOOR PRE-EMISSION AND ACTUAL EMISSION AMOUNT
S620
OUTDOOR EMISSION RANGE?
NO
YES
XY = OUTDOOR
S621
S623
LEARNING?
YES
XY = INDOOR
S622
S624
LEARNING?
YES
B
XY = (INDOOR, OUTDOOR)
S633
XY "INDOOR/ OUTDOOR" REDEFINITION
EMISSION AMOUNT ERROR
EMISSION AMOUNT ERROR
S625
INDOOR AWB PROCESSING
S626
OUTDOOR AWB PROCESSING
S627
INDOOR EVALUATION VALUE?
NO
YES
S628
OUTDOOR EVALUATION VALUE?
NO
YES
WHITE EVALUATION VALUE ERROR
XY = OUTDOOR
S629
S631
LEARNING?
YES
XY = INDOOR
S630
S632
LEARNING?
YES
WHITE EVALUATION VALUE ERROR
PHOTOGRAPHED IMAGE PROCESSING

FIG. 10

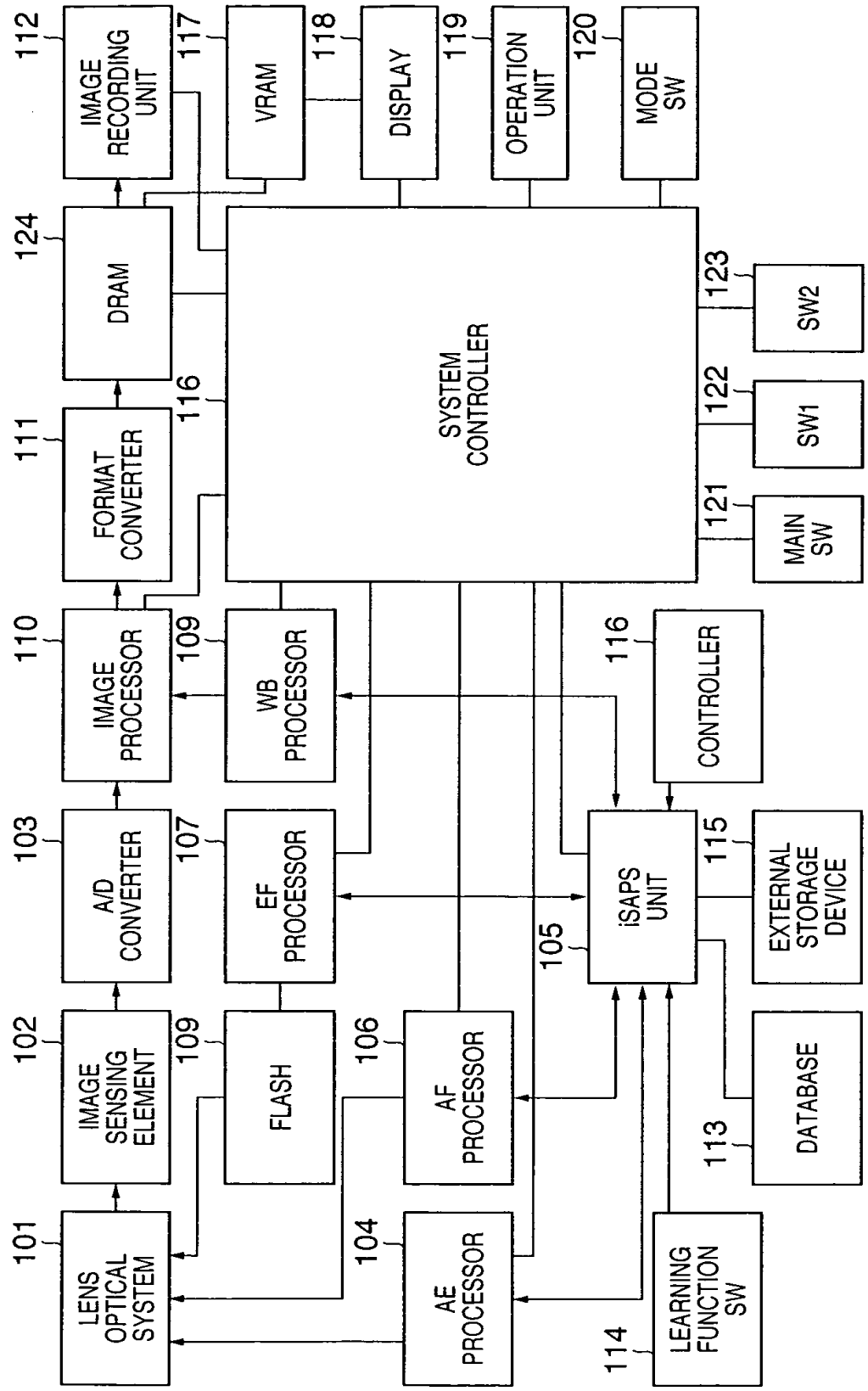

101
LENS OPTICAL SYSTEM
102
IMAGE SENSING ELEMENT
103
A/D CONVERTER
104
AE PROCESSOR
105
iSAPS UNIT
106
AF PROCESSOR
107
EF PROCESSOR
109
FLASH
109
WB PROCESSOR
110
IMAGE PROCESSOR
111
FORMAT CONVERTER
112
IMAGE RECORDING UNIT
113
DATABASE
114
LEARNING FUNCTION SW
115
EXTERNAL STORAGE DEVICE
116
CONTROLLER
116
SYSTEM CONTROLLER
117
VRAM
118
DISPLAY
119
OPERATION UNIT
120
MODE SW
121
MAIN SW
122
SW1
123
SW2
124
DRAM

FIG. 11

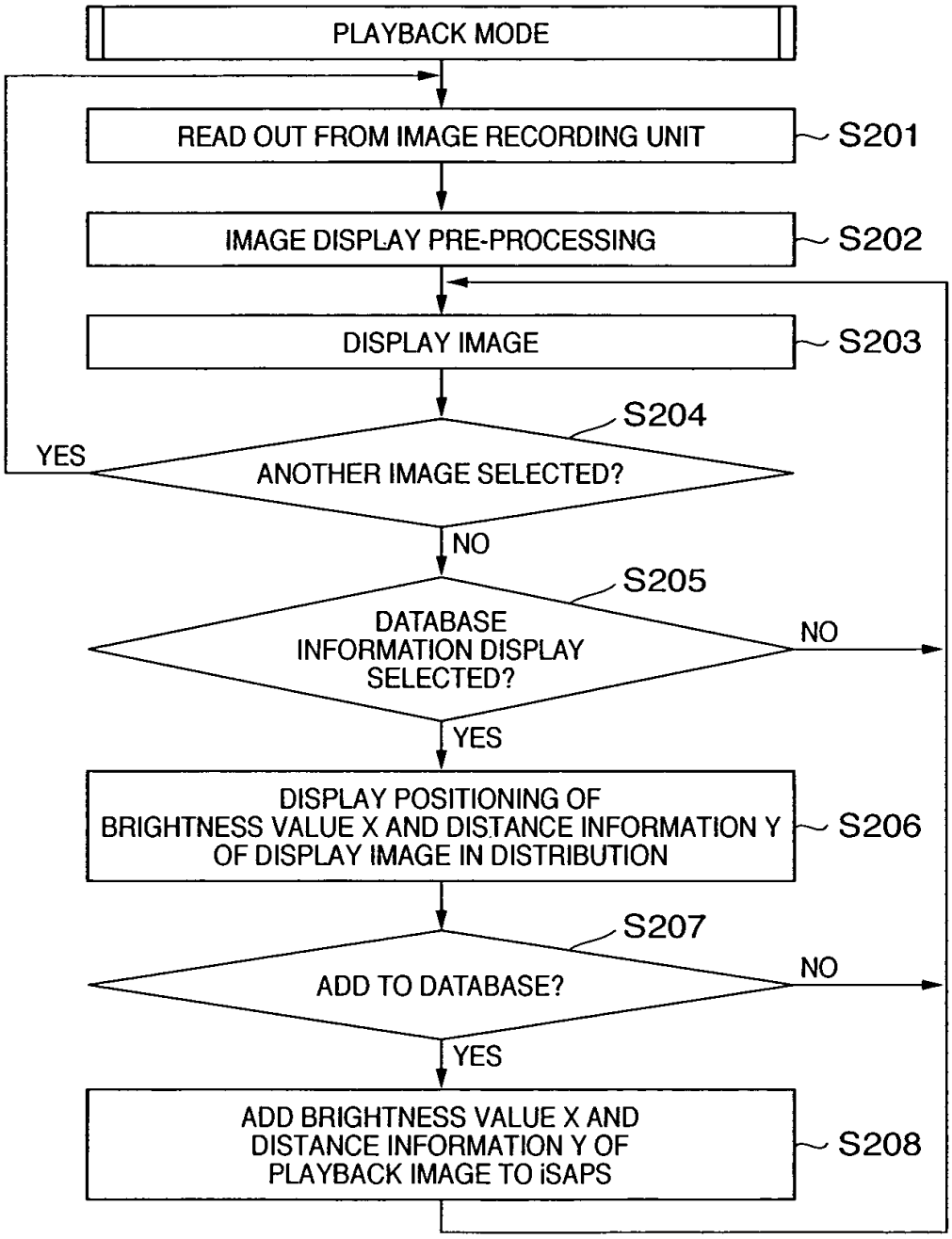

PLAYBACK MODE
READ OUT FROM IMAGE RECORDING UNIT
S201
IMAGE DISPLAY PRE-PROCESSING
S202
DISPLAY IMAGE
S203
S204
ANOTHER IMAGE SELECTED?
YES
NO
S205
DATABASE INFORMATION DISPLAY SELECTED?
NO
YES
DISPLAY POSITIONING OF BRIGHTNESS VALUE X AND DISTANCE INFORMATION Y OF DISPLAY IMAGE IN DISTRIBUTION
S206
S207
ADD TO DATABASE?
NO
YES
ADD BRIGHTNESS VALUE X AND DISTANCE INFORMATION Y OF PLAYBACK IMAGE TO iSAPS
S208

FIG. 12

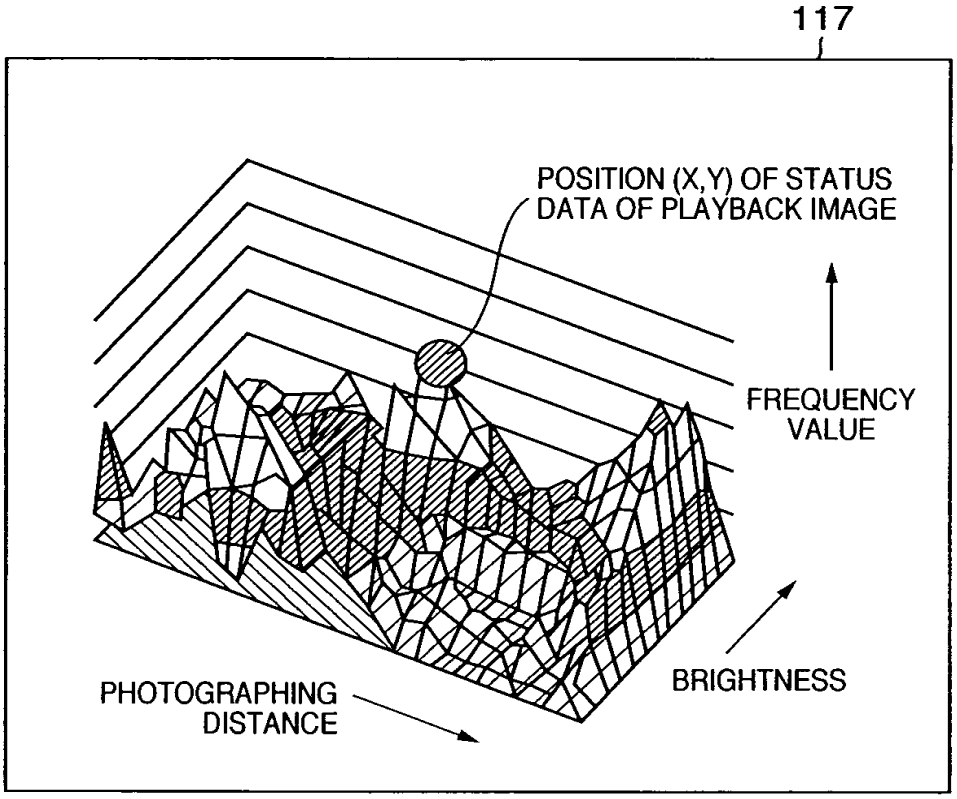

117
POSITION (X,Y) OF STATUS DATA OF PLAYBACK IMAGE
FREQUENCY VALUE
BRIGHTNESS
PHOTOGRAPHING DISTANCE

FIG. 13

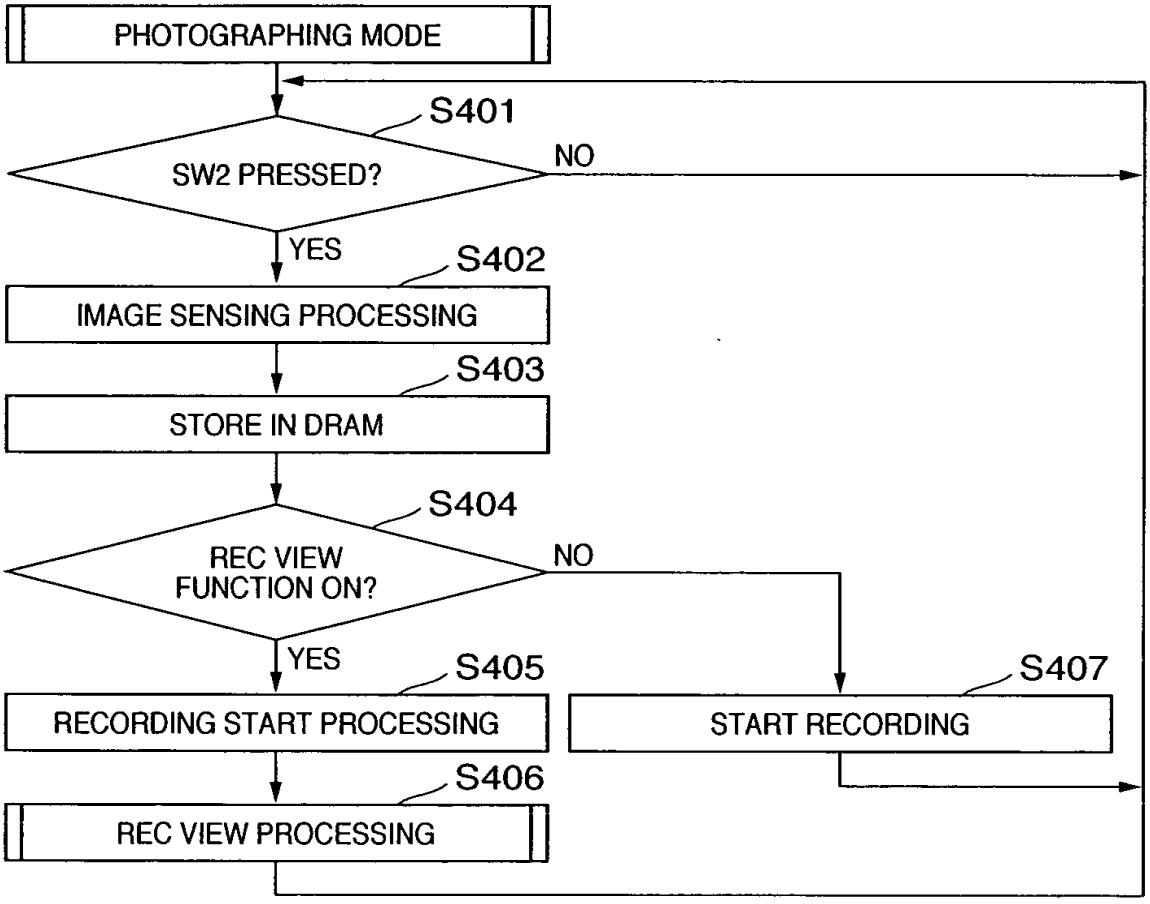
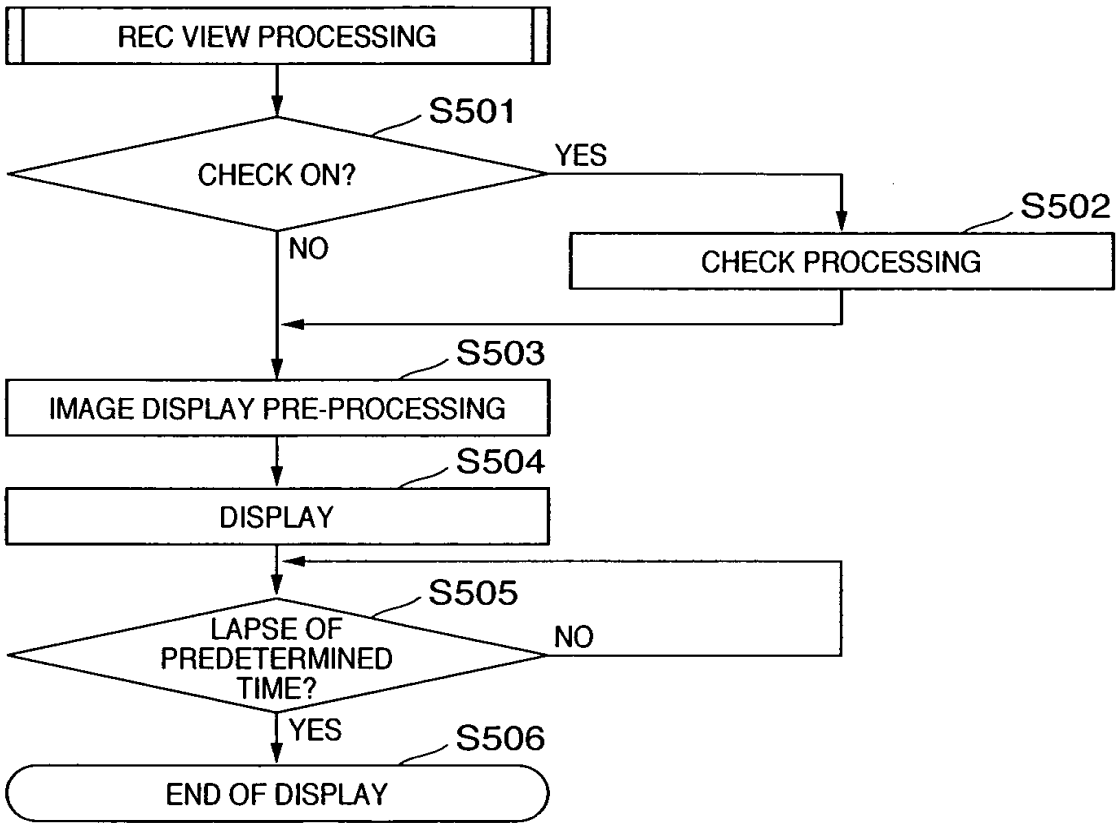

PHOTOGRAPHING MODE
S401
SW2 PRESSED?
NO
YES
S402
IMAGE SENSING PROCESSING
S403
STORE IN DRAM
S404
REC VIEW FUNCTION ON?
NO
YES
S405
RECORDING START PROCESSING
S406
REC VIEW PROCESSING
S407
START RECORDING

FIG. 14


REC VIEW PROCESSING
S501
CHECK ON?
YES
NO
S502
CHECK PROCESSING
S503
IMAGE DISPLAY PRE-PROCESSING
S504
DISPLAY
S505
LAPSE OF PREDETERMINED TIME?
NO
YES
S506
END OF DISPLAY

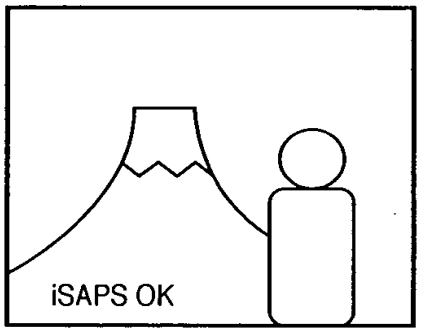


FIG. 15A

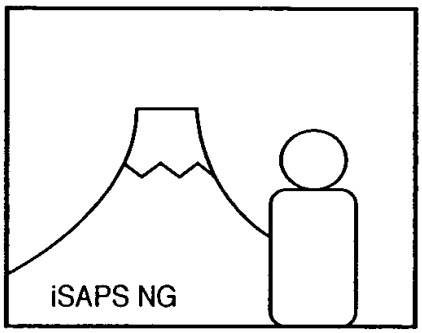


FIG. 15B